

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “more than one” vessel(s), more than one “feed space”, “more than one feed distribution space” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Claim 14 and dependent claims are directed “at least one” referring to the elements discussed above, and the figures and specification supports only “one” vessel, etc and one filtration units; in the case of more than one filtration unit in the system the arrangement of the units in the system need to be shown in the figures.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims 14-30 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for 'a filtration system provided with tubular filter modules separating the vessel in different sections or compartments, defining a feed space, a permeate collection space and provided with an aerator in the feed space; a feed distribution space...." does not reasonably provide enablement for multiple vessel or multiple filtration units with the same elements as in the first filter or filter unit; and in the case that more than one filter unit is in the system, the arrangement of the filtration units or filter is not disclosed. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to provide a system with multiple vessels arrangement in the system the invention commensurate in scope with these claims.

***Claim Rejections - 35 USC § 112***

Claims 29 and 26, 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 29 is unclear as to the pump position in claim 14, is arranged to supply the suspension to be filtered into the "feed distribution space", since the feed distribution space, in current claim 29 provides the suspension directly from the "feed distribution space".

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26, 28, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cote et al (US 6,375,848) in view of Gingerich et al (US 6,656,356). Cote et al discloses a filtration system provided with at least one vessel provided with aerated modules, and provided with adjacent tank containing the fluid to be filter (or distribution space), and directing the fluid from a tank surrounding, e.g. having a common wall, with the first tank or vessel, the fluid passing in a direction perpendicular to the filters (or hollow fiber membrane modules; the reference further teaches providing the modules in an horizontal direction with respect to the bottom of the tank (see figures 8 and 6). The permeate space (s) in communication with a vacuum pump are further disclosed in the figures. Cote lacks the filter modules removable.

Patent to Gungerich et al teaches filters, e. g. hollow fiber membrane modules removable from the permeate collector (figures 1 and 2). It would have been obvious to one skilled in this art at the time this invention was made to alternatively use removable modules in the aerated hollow fiber membrane system of Cote, e.g. to alternatively and separately clean a module (bundle) while the rest of the submodules are operating, facilitating therefore continuous operation.

As to clam 28, the filer in Cote has a plurality of membrane units.

As to claim 30, one of the tanks, e.g the one feeding the subsequent tank or vessel constitutes the feed distribution space. The reference to Cote et al teaches in general that the feed can pass from one vessel to an adjacent vessel from above the filter and the filter can be positioned in an horizontal position or in an opposite direction to the feed, and within the feed space.

Claims 14-18, 19, 20, 21, 25, 26, 27, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/26363 in view of EP 0734758 A1 and WO 00/20104. Reference '363, discussed in current specification, teaches a tubular filter module within a housing separated by plates and defining a plurality of spaces within the housing, e.g feed space, filtrate space and retentate space, and aeration device (figures 1 and 2, elements 22, 23, 24, 21, 20, 41, 42, 51, 52, 11, 7). Reference '363 fails to teach positioning the feed tank, or "feed distribution space" laterally and at least partially surrounding the feed space. EP'758 teaches providing the feed tank or feed space around the feed inlet to a feed space in an aerated filtration module (elements 110, 3, 301).

Claim 1 also requires that the plurality of filter elements is "removable", which is not discussed in '363 or '748. Reference '104 teaches tubular filter elements within a vessel and separated into spaces (feed, retentate and permeate spaces) and wherein the tubular filters can be removed from the plates (3.1, 3.3) by removing the screws holding the filter element (Figures 1-3). The skilled in this art at the time this invention was made would have been motivated to provide the filter of '363 with modules that can

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be removed from the housing, e.g. to facilitate filter replacement. By selecting the feed distribution space (tank 3) of reference '758, the skilled artisan can predict a reduction in piping in the system.

As to claim the structure of claims 15-18 is covered by the discussion of '363. As to claim 19, the tap-off device (or outlet) is represented by element (301).

The air pulse or air supply elements are disclosed in '363 (elements 51, 52).

The method of operating the system for filtering a liquid while discharging gas in the feed space is disclosed in '363.

As to claim 25, the filter units are identical (see figures in '363).

As to claims 26-28 reference '363 teaches using the tubular membrane unit for filtering a suspension (abstract) in connection to the apparatus of figures 1-3.

Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/26363, of EP 0734758 A1 and WO 00/20104 as applied to the claims above, and further in view of Ando et al (US 6,733,675) and Rabie et al (US 6,881,343). The process of cleaning the membrane other than air or gas is not disclosed in the documents above. Patent '675 teaches conventional methods for cleaning membranes, as applied to spiral wound; however these techniques also apply to tubular membranes and hollow fibers (column 7, line 35 through column 9, line 61).

Rabie et al ('343) discloses an aerator for providing air or gas to a membrane for cyclic cleaning or gas pulse, by controlling the gas discharge (column 8, lines 17-34).

It would have been obvious to one skilled in this art at the time the invention was made to use a constant air injection or intermittent by using a diffuser with a control for discharging gas as suggested in '343.

### ***Response to Arguments***

Applicant's arguments filed 5/26/10 have been fully considered but they are not persuasive. As discussed with the Attorney on 7/30/2010, attached, the language in claim 14 is not fully supported in the drawings, as discussed in the rejection above. Claim 14, includes a pump for supplying the suspension to be filtered into the feed space, which does not exclude the feed connected to the pump connected between the vessel and the feed distribution space. Furthermore, providing the feed distribution space next to the vessel or surrounding the vessel, without any significant change in the apparatus function, is considered an Applicant's obvious design choice. The rejection of claim 21 and dependent claims is also maintained because the separation with the filter in presence of gas or aeration is independent of the position of the feed tank, in particular when the inlet to the vessel or tank correspond to an inlet that can be alternatively connected to a standard pipe to supply the suspension. Claim 4 should start with a0 providing the suspension to the feed distribution space...; and finally, the process of claim 21 is not directed to performing the filtration in the apparatus or filtration system of the invention, therefore, the claim as amended and added claims 29-30 are also rejected. Based on the structure of the claimed system the rejection discussed above is proper. As recognized by Applicant and further added prior art of record, the structure of the filters (tubular) between plates defining a feed space and a permeate space an

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aerator is common knowledge. The arrangement of the feed distribution space in combination with the feed inlet opening to the feed space, as described in specification, paragraph [0010] is not fully recited in the claims and may constitute allowable subject matter, as discussed with Mr. Milller.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Additionally cited references in this action show the state of the art in tubular filters separated from plates to define the feed, permeate and retentate spaces within the housing.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANA M. FORTUNA whose telephone number is (571)272-1141. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on 571-272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ANA M FORTUNA/  
Primary Examiner, Art Unit 1797